CENWP-OD-G June XX, 2010

Memorandum for: Portland District Regulatory Branch, Ms. Debra Henry

Subject: Project Review Group (PRG) review of the *Sediment Management Plan* (SMP) for the Vigor Industrial LLC Dry Docks 1 and 3 Maintenance Dredging at the Portland Ship Repair Yard, Oregon, Regulatory Project No. NWP-2007-195.

Reviewers: The following summary reflects the consensus determination of the Portland District Project Review Group (PRG) agencies (U.S. Army Corps of Engineers, Environmental Protection Agency, National Marine Fisheries Service, Washington Department of Ecology, and Oregon Department of Environmental Quality) regarding the consistency of the SMP with the 2009 *Sediment Evaluation Framework for the Pacific Northwest* (SEF). James McMillan (Corps), Dan Gambetta (NMFS), Peter Anderson (Oregon DEQ), Laura Inouye (Washington Department of Ecology), and Jonathan Freedman (EPA) reviewed the SMP for consistency with the SEF guidance, as well as consistency with rules, regulation, and agency policy for support of Section 10, 401 Water Quality Certification, and CERCLA coordination. U.S. Fish and Wildlife Service did not review the SMP.

Prepared by: James M. McMillan (CENWP-OD-G)

Project Authorities: Section 10 of the Rivers and Harbors Act, 401 Water Quality Certification, Section 7 of the Endangered Species Act, Section 305 of the Magnuson-Stevens Act, et al.

Project Description: The Portland Ship Repair Yard is located at 5555 North Channel Avenue in Portland, Oregon (Latitude 45 32’ 30”, Longitude 122 42’ 30”), between the Swan Island Lagoon and the Willamette River.

See the Sediment Characterization Technical memorandum for details on the dredging project. Briefly, Vigor Industrial is proposing to perform maintenance dredging at the Portland Ship Repair Yard, located in Portland, Oregon. The project involves the removal of an approximate total of 81,000 cubic yards (cy) of material from two areas at the facility. Approximately 2,500 cy of sediment will be removed from the Dry Dock 1 Area basin to achieve a -55 feet CRD depth, and approximately 78,500 cy from the Dry Dock 3 Area basin to achieve a -65 feet CRD depth. The Dry Dock 1 Area to be dredged covers approximately 0.22 acres and the Dry Dock 3 Area covers approximately 6.2 acres

Summary of Sediment Characterization:
Dry Dock 1: Sediment in DMMU 1A contained SL1 exceedences for the metals copper, mercury and zinc; for the PAH fluorine; and dimethylphthalate. There were SL2 exceedences for the PAHs anthracene, benzo(b,k) fluoranthene, phenathrene, total LPAHs; the phthalate, Bis(2-ethylhexyl)phthalate (BEHP); and for dibenzofuran, total PCBs, and tributyltim (TBT).

For all of the compounds that had exceedences of either SL1 or SL2 in DMMU 1, concentrations were lower in the NSM. Additionally, all NSM samples passed bioassays, indicating it was unlikely that these concentrations would adversely impact benthic organisms.

The bioaccumulative compounds PCBs and TBTs also exceeded SL1 values, and had decreased concentrations in the new surface material. However, PCBs still exceeded SL2 in the new surface material. Additionally, although the bioaccumulative DDE/DDD/DDT group of compounds (DDX) did not exceed benthic SLs, the concentrations were substantially increased in the new surface material (total DDX in prism was 3.2 ppb, total DDX in NSM was 54 ppb).

Dry Dock 3: Sediment in DMMUs 2A, 2B, 3A, 4A, 4B, 5A, and 5B exceeded SL1 for copper, and in DMMUs 3A, 4A, 5A, and 5B exceeded the SL1 value for zinc. Concentrations of these metals were wtill elevated above SL2 values in the NSM, except for DMMU2. Metals which exceeded screening levels generally decreased with depth.

DMMUs 3A, 4B, and 5A, contained BEHP at concentrations greater than the SL2 value; DMMU 5B exceeded the SL1 value. BEHP tended to increase in concentration with depth , except for DMMU 2 which did not exceed SL1s for either the dredge prism or the NSM.
All NSM samples passed bioassays, indicating it was unlikely that these concentrations would adversely impact benthic organisms.

The bioaccumulative compound TBT and SL exceedences for all DMMUs except 2A and 3A. concentrations increased in the NSM for all the DMMUs. For the bioaccumulatives DDE/DDD/DDT and total PCBS, no screening values were exceeded, but concentrations increased in the NSM.

Summary of PRG response:
Suitability Determination (Dredged Material): The dredged material, in both Dry Dock 1 and Dry Dock 3, is unsuitable for unconfined, in-water placement without further testing. Since confined, upland placement is proposed for the dredged material, and elutriate will be captured and transferred to a wastewater treatment facility located at the site, elutriate testing at the disposal facility is not warranted.

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Suitability Determination (NSM): The new surface material contains bioaccumulative chemicals of concern (BCoCs) at concentrations greater than the overlying DMMUs in all DMMUs. Detected BCoCs that increased with depth include DDXs, PCBs (Aroclors), and tributyltin. In the Dry Dock 1 NSM, BCoCs include the DDXs and PCBs; in the Dry Dock 3 NSM, BCoCs include PCBs and tributyltin. Although the NSM samples passed bioassays, these bioassays do not address potential toxicity to fish as well as impacts from biomagnification.

Commented [lsi1]: Added text here and removed a ton of stuff that was in the SCR TM.

Dry Dock 1: In Dry Dock 1, the primary issue is the increase in total DDX from the dredge prism to the NSM. The permit applicant must address the risk of increased concentrations of total DDX that would occur as a result of the dredging project. PCBs decrease with depth from the dredge prism to the NSM, ~~and~~ therefore no further applicant analysis or review of this COC ~~by the applicant~~ is warranted per the SEF.

Dry Dock 3: In Dry Dock 3, the primary issue is the increase in tributyltin with depth, as well as increasing concentrations of DDX and PCBs. The permit applicant must address the risk of increased concentrations of tributyltin that would occur as a result of the dredging project.

Summary of SMP:
The SMP proposed monitored natural recovery (MNR) with bathymetric surveys to be conducted 3 years after the dredging event. This proposal was based on (1) estimated 8 inches per year sedimentation rate, (2) due to the deep water, it is unlikely that salmonids, the primary organisms of concern, will be directly exposed to NSM, (3) TBT has low water solubility, and rapidly breaks down in aerobic environments, and would therefore likely dissipate and degrade rather than bioaccumulate, (4) SEF says, “if dredging

Commented [D2]: Aerobic at 60 feet?

results in the exposure of NSM [new surface material] as clean as, or cleaner than, the overlying sediments, no additional requirements are triggered under this manual."

PRG Response to the SMP:
The PRG feels that the proposed approach is not acceptable for multiple reasons.

In response to summary points 1 and 2, although MNR has been accepted as a path forward for other projects (notably Port of Portland), it has been approved only with strong supporting evidence showing incoming sediments were relatively clean and function as a clean cover, supporting evidence showing that bioaccumulation would not pose human health risks, and a strong monitoring plan that include post-dredging sediment sampling and analysis for CoCs.

Port of Portland had sediment trap data and clean surficial sediments at their site to support the claim that incoming sediments would function as a clean cover. In order to address human health /bioaccumulative concerns, they used data from around the area to develop a BSAF-based approach to estimate tissue levels, and compared to human health risk-based target tissue values. Their monitoring plan includes post-dredge sampling and follow-up sediment monitoring, as well as bathymetric surveys. Although Vigor indicates an eight inch per year sedimentation rate, there is no evidence indicating that the quality of the sediments would be appropriate as clean cover. Concentrations of PCBs, DDT and its products, and TBT that would be left exposed for this project far exceed those from the Port of Portland project, so using the Port of Portland's path forward for bioaccumulative risks would not necessarily lead to the same conclusion in this project. Given the discussion in this paragraph, the PRG believes that a monitoring plan that consists of a single bathymetric survey three years after the dredging is insufficient. It should also be noted that if an MNR approach is ultimately selected for this dredging project, this determination should not be construed as indicating that MNR is an acceptable remedy under the CERCLA cleanup. This location is likely to be considered for a structural remedy in the cleanup.

Commented [lsi3]: Someone double check me here! **(Laurra I think that is right, I'm not sure about bathymetry and how frequent it might be**

In response to summary point 3, regardless of solubility information for TBT, porewater concentrations were as high as 330 ug/L. Acute water quality criterion for freshwater is 0.46 ug/L in freshwater and dispersal of TBT during dredging is a serious concern. [not sure if we can say anything about need to address WQ during dredging due to earlier statement in TM about no further testing needed due to upland disposal…Also, check with Jonathan to see if he had any response from Chip before he heads out of country.] Wait – I still think we can say that DEQ may require elutriate testing if they think a water quality standard might be violated. This is exactly why we want the State to be certifying projects in the Willamette.

Commented [lsi4]: I'd like to double check where this came from and what is it based on… because they WILL ask! Ideally, it is based on human or ecological risk. **It's in Table 10-1, it comes from the 2006 EPA criteria and I believe it is based on ecological risk**

In response to summary point 4, the intent of the SEF language regarding new surface material was to evaluate CoCs on an individual chemical basis, not a "the majority of the compounds were better" approach, especially when dealing with bioaccumulative compounds, which each have different associated risk factors. It is also important to note that the full SEF language regarding new surface material in cases such as this reads, "If dredging results in the exposure of new surface material as clean as, or cleaner than, the overlying sediments, then no additional requirements are triggered under this manual. There may be additional requirements under the cleanup process in addition to the ESA Section 7 consultation." In this case, the project is in an area that is being evaluated for inclusion in the Portland CERLCA cleanup area, and the Record of Decision has not yet been finalized. Thus, coordination with EPA is important, especially since TBT, PCBs and DDT/DDT products are included in the Chemicals of Concern for the CERCLA evaluation. (see above two paragraphs up, I think it works better there) This is OK as is.

Commented [lsi5]: JONATHAN, please review for language here!!

Contact: If you have questions regarding the content of this memorandum, please contact James McMillan (PRG Lead) by telephone at (503) 808.4376 or by email at james.m.mcmillan@usace.army.mil.

References:

ERM. 2010. Sediment Characterization Report, Portland Ship Repair Yard, Portland, Oregon. Prepared for Vigor Industrial, Inc., February 2010. 26pp + figures + tables + laboratory results.

ERM. 2009. Revised Maintenance Dredging Sampling and Analysis Plan, Portland Ship Repair Yard, Portland, Oregon. Prepared for Vigor Industrial, Inc., May 2009. 20pp + figures + tables.

Vigor Industrial LCC. 2010. Sediment Management Plan. Submitted to USACE, May 27, 2010.

[ADD IN REFERENCE TO SCR TM]

Contaminant	UOM	SL1	SL2	1A	1Z	2A	2B	2Z	3A	3B	3Z	4A	4B	4BD	4Z	4ZD	5A	5B	5Z
Total Solids	%			64.7	79.9	47	55.1	54.4	46.8	53.6	54.6	47.6	52.9	53.5	57.8	58.1	46.3	51	57.3
Total Organic Carbon	ug/kg			0.852	0.293	2.49	1.95	2.4	2.42	1.97	2.39	2.18	2.15	2.02	2.06	2.08	2.24	1.98	2.01
Copper	ug/kg	80	830	593	95	83	109	76	153	54	91	452	112	314	153	177	596	156	376
Mercury	ug/kg	0.28	0.75	0.293	0.279	0.077	0.069	0.095	0.062	0.065	0.104	0.061	0.078	0.063	0.114	0.09	0.057	0.06	0.087
Zinc	ug/kg	130	400	354	101	90	94	103	148	86	136	223	127	130	183	185	262	137	368
Anthracene	ug/kg	1,200	1,600	1,800	150	3.7 j	6.9 j	5.6 j	6.2 j	3.2 j	19	25	4.7 j	7.2 j	36	47	31	5.5 j	120
Benzo(b,k)fluoranthene	ug/kg	600	4,000	4,400	1,940	23.4	37.9	42	31.5	21.4	109	96	32.2	38	215	232	214	46	510
Fluorene	ug/kg	1,000	3,000	1,200	38	3.3 j	6.8 j	5 j	5.5 j	3.9 j	17	33	5.7 j	6.5 j	29	39	55	5.1 j	97
Phenathrene	ug/kg	6,100	7,600	7,800	1,500	14	41	31	27	15	110	120	32	35	190	250	370	27	600
Total LPAH	ug/kg	6,600	9,200	11,991	1,831	36.5	72.6	56.4	71.3	37	182.7	279.8	0	70.7	308.6	404.1	575.1	55	978
Dimethylphthalate	ug/kg	46	440	59 j	<6.3 U	3.2 j	<9.1 U	<9.1 U	2.9 j	<9.3 U	<9.2 U	3.4 j	2.1 j	3 j	4.5 j	2.9 j	4.3 j	27	3.2 j
bis(2-Ethylhexyl)phthalate	ug/kg	220	320	1,800	40 j	130	76 j	210	360	88 j	430	220	400	190	1,100	680	1,400	240	3,000
Dibenzofuran	ug/kg	400	440	490	8	1.4 j	3.3 j	2.1 j	2.3 j	1.4 j	7.2 j	21	2.7 j	3.6 j	11	15	49	2.3 j	41
PCBs (total)	ug/kg	60	120	380	260	ND	9.3	8.9	ND	8.7	14	ND	ND	ND	20	26	ND	ND	32
Tributyltin (dry wt)	ug/kg	75	75	3,300	41	48	220	890	50	89	2,200	100	660	190	3,100	3,900 J+	77	270	6,500 J+
Tributyltin (pore water)	ug/L	0.15		330 J+	--	--	0.84	--	0.055	--	--	--	--	--	--	--	--	--	--

J estimated value

U Non-detected (MDL reported)

ND All individual constituents included in calculation were not detected

-- not analyzed

* QC failure, RPD for laboratory duplicate is outside control limits.